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D E C I S I O N
of 12 June 1997

Case Number: T 0085/94 - 3.3.1
Application Number: 85304557.3
Publication Number: 0166611
IPC: C07D 275/02

Language of the proceedings: EN

Title of invention:
Stabilization of aqueous solutions of 5-chloro-3-
isothiazolones

Patentee:
ROHM AND HAAS COMPANY

Opponent:
Thor Chemicals Limited

Headword:
Stabilization/ROHM AND HAAS

Relevant legal provisions:
EPC Art. 54(1), 54(2)
EPC R. 71

Keyword:
"Disclosure by prior use - purpose of component of a chemical
composition implicitly disclosed"
"Novelty (main request: no - auxiliary request: yes)"
"Oral proceedings in the absence of the parties"

Decisions cited:
-

Catchword:
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Boards of Appeal

Chambres de recours

Case Number: T 0085/94 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 12 June 1997

Appellant:
(Opponent) Thor Chemicals Limited
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Representative: Hardisty, David Robert
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Respondent:
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Representative: Angell, David Whilton
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 29 November
1993 concerning maintenance of European patent
No. 0 166 611 in amended form.

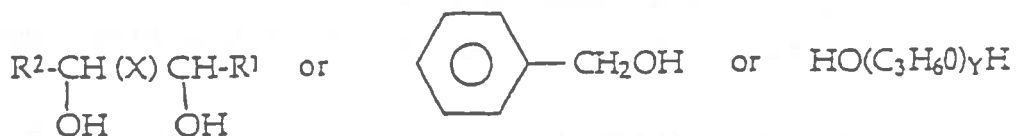
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Members: R. K. Spangenberg
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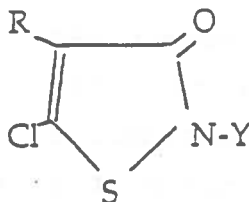
Summary of Facts and Submissions

I. European patent No. 0 166 611 was granted on 16 August 1989 in response to European patent application No. 85 304 557.3. Following a notice of opposition the Opposition Division of the EPO announced orally on 3 August 1993 the decision to maintain the patent in amended form. This decision was delivered with written reasons on 29 November 1993 and was based on a main request with a set of 6 amended claims, submitted during the oral proceedings on 3 August 1993. Claim 1 of this set, the only independent claim, read as follows:

"1. The use of 68 - 98, 85 % by weight of one or more hydroxy solvents of the formulae:



wherein R² and R¹ are (C₁-C₆)alkyl, X is -CH₂OCH₂- or (CH₂)_n where n is an integer of 1 to 4, and y is an integer of 1 to 150; as a partial or complete replacement for nitrate stabilisation salt in a stabilized isothiazolone solution which comprises from 0.5% to 7% isothiazolone of the formula:



wherein

Y is an alkyl group of 1 to 8 carbon atoms optionally substituted with one or more hydroxy, halo, cyano, alkylamino, dialkylamino, arylamino, carboxy, carbalkoxy, alkoxy, aryloxy, alkylthio, arylthio, isothiazolonyl, haloalkoxy carbamoxy, morpholino,

piperidino or pyrrolidino groups, an unsubstituted or halo-substituted alkenyl or alkynyl of 2 to 8 carbon atoms, an unsubstituted cycloalkyl of 5 to 8 carbon atoms, an aralkyl group, optionally substituted with one or more halo, nitro, (C₁-C₄)alkyl or (C₁-C₄)alkoxy groups, or an aryl group optionally substituted with one or more halo, cyano, nitro, (C₁-C₄)alkyl, (C₁-C₄)alkoxy C₁-C₄ alkyl-acylamino, (C₁-C₄)carbalkoxy or sulfamyl groups; R is hydrogen, halo, or (C₁-C₄)alkyl group;

from 0.5% to 14% water, and from 0.15 to 7% neutralisation salt, the percentages being by weight of the four components."

According to Claim 3 the solution defined in Claim 1 additionally contained stabilisation salt in an amount of from 0.01 to 2% by weight of the five components.

II. The Opposition Division held that the use according to the amended Claim 1 of the main request before it was novel and inventive in respect of an undisputed prior public use of a product sold under the trade name "ACTICIDE SPX" and

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as well as the common general knowledge in the technical field concerned, i.e. the stabilisation of isothiazolone biocides. It considered particularly that the mere existence of the product "ACTICIDE SPX", which contained diethylene glycol as well as a nitrate salt, did not disclose or suggest the **function** of the diethylene glycol as a partial replacement of the stabilising nitrate salt.

III. The Appellant (Opponent) filed an appeal against this decision. In the statement of grounds of appeal he submitted that the product "ACTICIDE SPX", which contained only 0.14% by weight of magnesium nitrate as a stabilisation salt, was sufficiently stable during its normal use as a biocide. Since it was known from D1 that normally even in the presence of an organic solvent at least one percent by weight of a nitrate stabilisation salt was necessary in order to obtain a sufficiently stable isothiazolone solution, and since the known commercial product "Kathon MW 1.5", an aqueous composition, contained 1.9% by weight of nitrate stabilisation salts, a skilled person would have immediately recognised that the small amount of magnesium nitrate present in "ACTICIDE SPX" would not have been sufficient for the formation of a stable product, so that at least part of the stabilisation was due to the presence of the diethylene glycol. Therefore, so he submitted, the use of diethylene glycol as **partial** replacement of nitrate stabilisation salt belonged to the state of the art.

IV. The Respondent (the patent proprietor) did not dispute that the chemical composition of ACTICIDE SPX was available to the public. Nor did he dispute that ACTICIDE SPX was probably considered satisfactorily stable by those customers who used it. However, he disputed that this knowledge would have led one skilled in the art to deduce that the diethylene glycol present in ACTICIDE SPX was acting as a stabiliser. The Respondent submitted that if the skilled person in 1984 had come across ACTICIDE SPX containing 1.0% isothiazolone, 3.0% water, 0.14% magnesium nitrate and about 95% diethylene glycol, and irrespective of whether said person would have recognised that this product was stable and whether he would have been prepared to consider why it was stable, he would have

done so only based on what was publicly known about isothiazolone stabilisation at that time. In 1984, however, the only known stabilisers for isothiazolones were nitrate or nitrite as disclosed in D1, formaldehyde, and certain other individual metal salts. Therefore it was reasonable to assume that the nitrate was the stabiliser. He further argued that the amount of nitrate present in ACTICIDE SPX, which was much less than that found in other stabilised isothiazolone formulations of the time, was nevertheless sufficient as the sole stabiliser, since the amounts of both isothiazolone and particularly water were also significantly less than in many other formulations of the day, as pointed out in the declaration of Dr Ramesh Petigara dated 29 July 1993. Since it was generally known at that time that water destabilised isothiazolones, one would have expected that in a formulation containing less water and less isothiazolone, less nitrate would be required to provide satisfactory stabilisation. Thus the person skilled in the art would not have been led to conclude that the diethylene glycol solvent was itself acting as a stabiliser, since such conclusion would have been contrary to the then generally held beliefs, but would at most have concluded that the alleged additional stabilisation was due to some unknown factor.

- V. On 8 May 1997, in response to the summons to attend oral proceedings, the respondent filed a further set of five claims marked "Auxiliary Request". These claims substantially correspond to the claims according to the auxiliary request filed during the opposition proceedings, but contained the amendments made to the claims of the main request during the oral proceedings before the Opposition Division. Claim 1 of this request differed from that according to the main request by the deletion of the words "partial or" from the term "... as partial or complete replacement of ...", so that the

use of the specified hydroxy solvents as a partial replacement of nitrate stabilisation salt was no longer claimed.

For consistency, Claim 3 of the main request was omitted in the auxiliary request.

- VI. By telecopies dated 21 May 1997 and 27 May 1997, respectively, both parties withdrew their requests for oral proceedings and informed the Board that they did not wish to be represented at the oral proceedings. The Appellant further stated that he had no objections against the maintenance of the patent in suit on the basis of the claims according to the auxiliary request. In response, the Board informed the parties that oral proceedings would nevertheless take place and that a decision would be taken at these proceedings.
- VII. Consequently, oral proceedings took place on 12 June 1997 in the absence of both parties. At these proceedings the case was considered on the basis of the parties' written requests and submissions.
- VIII. The Appellant had requested in writing that the decision under appeal be set aside and the patent be maintained with the set of claims according to the auxiliary request.
- IX. The Respondent had requested in writing as main request that the appeal be dismissed and the patent maintained on the basis of the text underlying the decision under appeal, and as auxiliary request that the decision under appeal be set aside and the patent be maintained on the basis of the auxiliary request.
- X. At the end of the oral proceedings the decision to maintain the patent on the basis of the auxiliary request was announced.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

2.1. The Board concurs with the finding in the decision under appeal that the claims according to this request are not open to objection under Article 123(2) and (3) EPC. This finding was not in dispute during the appeal proceedings.

2.2. The allowability of this request hinges on the answer to the question whether the prior use of the product "ACTICIDE SPX" had made available to the public the **function** of the diethylene glycol in that composition as a **partial** replacement of nitrate stabilisation salt.

2.2.1. In this respect, the Respondent argued that the skilled person had no reason to assume that in the product "ACTICIDE SPX" the diethylene glycol was present **as a stabiliser**. However, Claim 1 of the main request does **not** require that diethylene glycol be used as a stabiliser, but merely as a **partial replacement** of nitrate stabilising salts. In the Board's judgment, and contrary to the Appellant's submission, it is in this context not necessary to consider whether the **mechanism** by which stabilisation of "ACTICIDE SPX" was achieved was made available to those skilled in the art. It is sufficient to consider whether the skilled person was informed, by the chemical composition of the product "ACTICIDE SPX", about the possibility of using diethylene glycol as a partial replacement of the nitrate salt, regardless of the reason for this possibility.

2.2.2. The information provided by the chemical composition of the product "ACTICIDE SPX" must be considered in the light of the common general knowledge (see points III and IV above). It is not in dispute that this product contains less nitrate than would have been believed necessary on the basis of the common general knowledge. A product composed according to the expectations derived from that common general knowledge is, for instance, the product "KATHON MW 1.5" (see point III above). According to the Respondent's own submission and the declaration of R.B. Petigara, submitted on behalf of the Respondent on 29 July 1993, a skilled person, having been confronted with the chemical composition of the product "ACTICIDE SPX" in 1984, "would have appreciated the principle that isothiazolone formulations containing less water and less isothiazolone generally require less nitrate salt to stabilize them" (see the above declaration, point 2.5). Consequently, this skilled person would have recognised that the replacement of the major part of the water solvent in the commercial product "ACTICIDE SPX" by diethylene glycol had reduced the amount of nitrate necessary for sufficient stabilisation of the isothiazolone (see e.g. the above declaration, point 2.6). On that basis, the Board holds that this effect of the diethylene glycol belonged to the state of the art.

2.3. Claim 1 of the main request thus lacks novelty, so that the main request must fail.

3. *Auxiliary request*

3.1. While the appeal is only to the extent that Claim 1 as maintained by the Opposition Division also covers the use of diethylene glycol as a partial replacement of nitrate stabilisation salt, the claims have been amended compared to those as granted, so it is

necessary under Article 102(3) to consider the question whether taking into account the amendments made, the patent and the invention to which it relates meet the requirements of the European Patent Convention.

- 3.2. The claims of this request are in accordance with the requirements of Article 123(2) EPC (see Claims 1, 3, and 5 to 7 as filed together with page 3, lines 6 to 21 and page 4, lines 6 to 10 of the original description). They also meet the requirement of Article 123(3) EPC, because they differ from the main request, which meets this requirement (see point 2.1 above), only by the deletion of one of the two alternatives covered by the latter.
- 3.3. The novelty objection raised against the main request is no longer applicable, since the use of diethylene glycol as a partial replacement of nitrate stabilisation salts is no longer claimed.
- 3.4. Regarding inventive step, the Board considers that document D1 represents the closest state of the art (see the patent in suit, page 3, lines 17 to 21), and that in respect of this state of the art the technical problem can be seen in providing an alternative way of stabilising isothiazolones of the type specified in document D1. In view of the experimental evidence contained in examples 2, 3, 5 and 6 of the patent in suit the Board is satisfied that this technical problem is solved by the claimed use of the hydroxy solvents indicated in present Claim 1. It is in the Board's judgment also clear that neither document D1 nor the prior use of the product "ACTICIDE SPX" could suggest to use diethylene glycol, let alone any other of the hydroxy solvents specified in the present Claim 1, as a **complete** replacement for nitrate salt in stabilised isothiazolone solutions. The Board therefore holds that the subject-matter now claimed involves an inventive

step. Since there is no longer any dispute about the allowability of the auxiliary request, there is no need to give more detailed reasons for this finding.

- 3.5. The patent in suit can therefore be maintained on the basis of Claims 1 to 5 according to the auxiliary request.

4. The description still requires adaptation to the allowable claims. For this purpose, the Board makes use of its power under Article 111(1) EPC and remits the case to the Opposition Division for considering appropriate amendments to be submitted by the Respondent.


Order

For these reasons it is decided that:

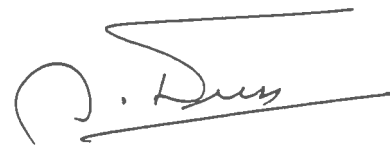
1. The decision under appeal is set aside.

2. The case is remitted to the Opposition Division with the order to maintain the patent on the basis of the auxiliary request with Claims 1 to 5 submitted on 8 May 1997 and a description to be adapted.

The Registrar:


E. Gorgmaier

The Chairman:


A. Nuss

